THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Nondestructive Evaluation

WELDENG 4301

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture
Lab

Course Description:
Main concepts of Nondestructive Evaluation of materials as applied to inspections of joints and structures; principles of conventional methods and their capabilities and limitations.

Prerequisites and Co-requisites:
Prereq: 4201, and enrollment as a WeldEng-BS major; or permission of instructor.

Course Goals / Objectives:
- Achieve basic understanding of main concepts and aims of nondestructive evaluation (NDE)
- Learn theoretical principles of NDE methods and their capabilities and limitations
- Learn applications of nondestructive material evaluation.
- Learn to apply NDE for joint inspections
- Obtain some basic laboratory experience with nondestructive evaluation methods

Course Topics:

- Introduction to NDE.
- Introduction to Ultrasonic Testing.
- Physical Principles of Ultrasonic.
- Reflection and transmission of ultrasonic waves.
- Ultrasonic Transducers. Ultrasonic laboratory.
- Ultrasonic testing methods. Laboratory.
- Introduction to radiography.
- Generation of X-rays.
- Radiation attenuation.
- X-Ray Films.
- Selection of Exposure Parameters. Radiographyc laboratory.
- Factors affecting quality of radiographs .
- Image quality indicators.
- Radiographs of welds and different radiographic techniques.
- Gamma Rays
- Real-Time Radiography
- Magnetic particle testing fundamentals.
- Physical principles of magnetization and inspection. Magnetic particle testing laboratory.
- Liquid penetrant testing. Liquid penetrant testing laboratory.

Designation:

Required